IN THE SPECIFICATION

Please rewrite the following paragraphs as indicated:

The paragraph beginning at page 1, line 9:

B1

Nitride III-V compound semiconductors constraining GaN as the major component are direct transitional semiconductors having forbidden band widths ranging from 1.9 eV to 6.2 eV and enabling realization of light emitting devices theoretically capable of emitting light over a wide range from the visible spectrum to the ultraviolet. For these properties, semiconductor light emitting devices using GaN semiconductors have been placed under active developments. Additionally, GaN semiconductors have a large possibility as material of electron mobility devices. Saturation electron velocity of GaN is approximately 2.0×10^{7} cm/s, which is larger than those of GaAs and SiC, and its breakdown electric field is as large as approximately 5×10^{6} V/cm next to the intensity of diamond. For these natures, GaN semiconductors have been expected to be greatly hopeful as materials of high-frequency, high-power semiconductor devices.

The paragraph beginning at page 5, line 7:

B2

The above-made discussion applies to the case where GaN FET is made on a sapphire substrate. However, the same problem also lies in the case where GaN FET is made on a SiC substrate that is very hard and chemically stable, similarly to sapphire substrates.

The paragraph beginning at page 8, line 21:

B3

When a substrate of a hard material such as sapphire substrate is used, diamond powder is a sole granular abrasive material acceptable for use in lapping. In general, thickness of the layer changed in quality or strained by lapping processing approximately amounts several times the grain size of the abrasive grains used there. Therefore, if the substrate should be thinned to a thickness around 20 nm, for example, since the thickness of

B3 contD.

the sapphire substrate before being thinned is usually about 400 μm, for thinning it, it is first processes by lapping, using an abrasive liquid containing diamond granular abrasive material with the grain size of 30 μm, for example. In this case, if it is further thinned, then the ratio of the strained layer relative to the remainder substrate will increase, and a large strain will invite warpage or breakage of the substrate. Then, by using a diamond granular abrasive material with a smaller grain size as large as 10 μm, for example, it is processed by lapping to a thickness around 100 μm, for example. As a result, the strained layer made by the preceding lapping can be removed. However, another strained layer of a thickness of decades of μm newly appears. Therefore, by next using an abrasive liquid containing a granular abrasive material with a grain size around 1 μm, for example, it is processed by lapping or polishing to a thickness around 40 μm.

The paragraph beginning at page 9, line 21:

In case of GaAs substrates, the strained layer produced by lapping has been fully removed conventionally by mechanical-chemical polishing. More specifically, it has been known that the strained layer can be removed completely by polishing the substrate in hypochlorous acid solution containing micro soft grains. However, As to sapphire substrates, no polishing in such solution has been known. Then, consideration is made on using the following method. That is, an appropriate amount of sulfuric acid is added to phosphoric acid, and the temperature is held at 280 °C. This liquid has an etching rate around 10 μm/hr for sapphire. High-temperature phosphoric acid has been known to have an etching function of sapphire (for example, (5) Ceramics Processing Handbook, Kensetsu Sangyo Chosakai (1987)). However, direct exposure of a device to such a high-temperature corrosive solution invites characteristic deterioration of the device and wiring. Therefore, there is the need for a countermeasure to ensure that phosphoric acid never touches the device side. For this purpose, a first effective measure is to bring only the bottom surface into contact with the

liquid, and a second effective measure is to make a protective film on the device side. Effective as the protective film are a SiO_2 film made by CVD, oxide or nitride film such as SiN film having a resistance to phosphoric acid, and heat-resistant polyimide film, for example.

B3 contd.

The paragraph beginning at page 14, line 1:

Here again explained are merits of thinning sapphire substrates. As shown in Fig. 6, thermal conductivity of sapphire is as small as approximately 0.4 W/cmK at the room temperature and has a large negative gradient relative to temperature, that is, it becomes lower as the temperature rises. In the case where a device using GaN semiconductors on a sapphire substrate, heat from the device during operation moves to the sapphire substrate due to heat conduction. In case of a high-power device, heat is radiated through a heat sink typically made on the bottom surface of the substrate. However, the fact that heat conductivity of sapphire decreases with increase of temperature means that heat radiation becomes difficult as the temperature rises. Therefore, from the viewpoint of heat radiation, it is advantageous that the sapphire substrate supporting the device is as thin as possible, and it is preferable to thin the substrate to the limit within a range acceptable for mechanical strength. By thinning in this level, efficient heat radiation is ensured, and the increase in temperature can be alleviated.

B4

The paragraph beginning at page 16, line 13:

In the first aspect of the invention, the single-crystal substrate is thinned typically by lapping to a thickness not larger than 100 μm, or a thickness not larger than decades of μm. In order to prevent any damage to the device upon etching for removing a strained layer by lapping, the surface of the device made on one major surface of the single-crystal substrate is preferably covered by a protective film having a resistance to the etchant prior to the etching. Usable as the protective film are, for example, a silicon oxide (SiO_2) film, silicon nitride

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B5 cont'D.

(SiN) film, or polyimide film. During the etching, it is preferable to immerse only the other major surface of the single-crystal substrate into the etchant.

The paragraph beginning at page 26, line 3:

B6

That is, as shown in Fig. 9, a Pt container 31 in form of a Petri dish containing an etchant 32 of H_3PO_4/H_2SO_4 mixed liquid by H_3PO_4/H_2SO_4=1:1 is put on the hot plate 30. The etchant 32 is previously heated to an etching temperature by the hot plate 30. Thereafter, held on the etchant 32 is a float cover 33 of a doughnut-shaped Pt plate having an outer diameter slight larger than the diameter of the Pt container 31 and an inner diameter slightly smaller than the diameter of the sapphire substrate 21. At that time, the float cover 33 is held so that its upper surface is at the same level as the liquid surface of the etchant 32. The float cover 33 is used to prevent evaporation of moisture from the etchant 32 of H_3PO_4/H_2SO_4 mixed liquid to thereby maintain composition of H_3PO_4 constant, and also to ensure that only the bottom surface of the sapphire substrate 21 contacts the etchant 32. Then, the sapphire substrate 21 is put on the float cover 33 to align its outer circumferential with the inner circumferential edge of the float cover 33. In this state, only the bottom surface of the sapphire substrate 21 contacts the etchant 32. As a result, only the bottom surface of the sapphire substrate 21 is etched, and a strained layer produced by lapping is removed.